Campylobacter Enteritis

1) THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic Agent

Campylobacter jejuni (*C. jejuni*) is the usual cause of campylobacteriosis, with only 1% of cases caused by other species.

B. Clinical Description

The most common symptoms of campylobacteriosis are diarrhea (sometimes bloody), abdominal pain, malaise, fever, nausea, and sometimes vomiting. Infection can cause a spectrum of disease ranging from mild, uncomplicated gastroenteritis to fulminant disease similar to acute appendicitis. Asymptomatic infections also occur. The illness is usually over within a week but may be prolonged in some individuals and can sometimes relapse. Long-term complications include reactive arthritis and Guillain-Barré syndrome, a rare disease that affects the nerves of the body beginning several weeks after the diarrheal illness. This disease results in paralysis that lasts several weeks and usually requires intensive care. It is estimated that approximately 1 in every 1000 reported campylobacteriosis cases leads to Guillain-Barré syndrome and as many as 40% of Guillain-Barré syndrome cases in this country are triggered by campylobacteriosis.

C. Reservoirs

Campylobacter bacteria are endemic in animals, notably cattle and poultry, although swine, sheep, and even pets such as birds, kittens and puppies may be sources of human infection. A very large percentage of raw poultry is contaminated with *C. jejuni*.

D. Modes of Transmission

Campylobacter is transmitted via the fecal-oral route. The most common mode of transmission is ingestion of food or water that has been contaminated with human or animal feces. This includes raw and undercooked poultry or pork, inadequately treated drinking water, and raw milk and raw milk products. However, any food contaminated with the bacteria can be a source of infection. In addition, farm animals and pets, such as puppies with diarrhea, can be sources of infection. Person-to-person spread can also occasionally occur, especially among household contacts, pre-school children in daycare, the elderly, and developmentally disabled persons living in residential facilities. Transmission can also occur through certain types of sexual contact (*e.g.*, oral-anal contact). A large dose of organisms is usually needed to cause infection, but the infectious dose may be lower for certain susceptible groups such as children, the elderly and the immunocompromised.

E. Incubation Period

The incubation period can vary from 1 to 10 days but is usually about 2 to 5 days.

F. Period of Communicability or Infectious Period

The disease is communicable for as long as the infected person excretes *Campylobacter* bacteria in their stool. This can occur from days to several weeks. People who are not given antibiotics have been known to shed these bacteria for as long as seven weeks.

G. Epidemiology

Campylobacter is the most common bacterial cause of diarrheal illness in the United States, surpassing salmonella in most studies. It is estimated that 2.5 million cases occur annually with almost all cases occurring as isolated, sporadic events. Although outbreaks due to this organism have occurred, they are uncommon.

Children and young adults have the highest incidence of infection and although *Campylobacter* doesn't commonly cause death, it has been estimated that approximately 500 persons with *Campylobacter* infections may die each year.

2) REPORTING CRITERIA AND LABORATORY TESTING SERIVCES

A. What to Report to the Massachusetts Department of Public Health

- Isolation of *Campylobacter* species from any clinical specimen.

Note: See Section 3) C below for information on how to report a case.

B. Laboratory Testing Services Available

The Massachusetts State Laboratory Institute (SLI), Enteric Laboratory will test stool specimens for the presence of *Campylobacter* and will confirm and speciate isolates sent from clinical specimens at other laboratories. Additionally, the Enteric Laboratory requests that all laboratories submit *all* isolates cultured for serogrouping to aid in the public health surveillance necessary for this illness. Call the Enteric Laboratory at (617) 983-6610 for more information.

The SLI, Food Microbiology Laboratory (617-983-6616) will test implicated food items from a cluster or outbreak. See Section 4) D: Environmental Measures for more information.

3) DISEASE REPORTING AND CASE INVESTIGATION

A. Purpose of Surveillance and Reporting

- To identify whether the case may be a source of infection for other persons (*e.g.*, a diapered child, daycare attendee or foodhandler) and, if so, to prevent further transmission.
- To identify transmission sources of major public health concern (*e.g.*, a restaurant or commercially distributed food product) and to stop transmission from such sources.

B. Laboratory and Healthcare Provider Reporting Requirements

Please refer to the lists of reportable diseases (at the end of this manual's introductory section) for specific information.

C. Local Board of Health Reporting and Follow-Up Responsibilities

1. **Reporting Requirements**

Massachusetts Department of Public Health (MDPH) regulations (*105 CMR 300.000*) stipulate that each local board of health (LBOH) must report the occurrence of any case of campylobacter enteritis, as defined by the reporting criteria in Section 2) A. Current requirements are that cases be reported to the MDPH Division of Epidemiology and Immunization, Surveillance Program using an official MDPH *Bacterial and Parasitic Gastroenteritis Case Report Form* (located in Appendix A). Please refer to the *Local Board of Health Reporting Timeline* (at the end of this manual's introductory section) for information on prioritization and timeliness requirements of reporting and case investigation.

2. **Case Investigation**

   a. It is the LBOH responsibility to complete a *Bacterial and Parasitic Gastroenteritis Case Report Form* by interviewing the case and others who may be able to provide pertinent information (see copy in Appendix A). Much of the information on the form can be obtained from the case's healthcare provider or the medical record.

b. Use the following guidelines to assist you in completing the form:
   1) Accurately record the demographic information, date of symptom onset, symptoms, and medical information.
   2) When asking about exposure history (food, travel, activities, etc.), use the incubation period range for *Campylobacter* (1–10 days). Specifically, focus on the period beginning a minimum of 1 day prior to the case's onset date back to no more than 10 days before onset.
   3) If possible, record any restaurants at which the case ate, including food item(s) and date consumed. If you suspect that the case became infected through food, use of the MDPH *Foodborne Illness Complaint Worksheet* (located in Appendix A) will facilitate recording additional information. It is requested that LBOHs fax or mail this worksheet to the MDPH Division of Food and Drugs (see top of worksheet for fax number and address). This information is entered into a database to help link other complaints from neighboring towns, thus helping to identify a foodborne illness outbreak. *This worksheet does not replace the Bacterial and Parasitic Gastroenteritis Case Report Form.*
   4) Ask questions about travel history and outdoor activities to help identify where the case became infected.
   5) Ask questions about water sources and contact because *Campylobacter* may be acquired through water consumption.
   6) Household/close contact, pet or other animal contact, daycare, and foodhandler questions are designed to examine the case's risk of having acquired the illness from, or potential for transmitting it to these contacts. Determine whether the case attends or works at a daycare facility and/or is a food handler.
   7) If you have made several attempts to obtain case information, but have been unsuccessful (*e.g.*, the case or healthcare provider does not return your calls or respond to a letter, or the case refuses to divulge information or is too ill to be interviewed), please fill out the case report form with as much information as you have gathered. Please note on the form the reason why it could not be filled out completely.

c. After completing the case report form, attach lab report(s) and mail (in an envelope marked "Confidential") to the MDPH Division of Epidemiology and Immunization, Surveillance Program. The mailing address is:

   MDPH, Division of Epidemiology and Immunization
   Surveillance Program, Room 241
   305 South Street
   Jamaica Plain, MA 02130

d. Institution of disease control measures is an integral part of case investigation. It is the LBOH responsibility to understand, and, if necessary, institute the control guidelines listed below in Section 4), Controlling Further Spread.

4) CONTROLLING FURTHER SPREAD

A. Isolation and Quarantine Requirements (*105 CMR 300.200*)

Foodhandlers with *Campylobacter* are to be excluded from work. *Note:* A case of *Campylobacter* is defined by the reporting criteria in Section 2) A of this chapter.

Minimum Period of Isolation of Patient

After diarrhea has resolved, foodhandling facility employees may only return to work after producing one negative stool specimen. If a case has been treated with an antimicrobial, the stool specimen shall not be submitted until at least 48 hours after cessation of therapy. In outbreak circumstances, a second consecutive negative stool specimen will be required prior to returning to work.

Minimum Period of Quarantine of Contacts
Contacts with diarrhea who are foodhandling facility employees shall be considered the same as a case and handled in the same fashion. No restrictions otherwise.

Note: A foodhandler is any person directly preparing or handling food. This can include a patient care or child care provider. See glossary for a more complete definition.

B. Protection of Contacts of a Case

None.

C. Managing Special Situations

Daycare
Since campylobacteriosis may be transmitted person-to-person through fecal-oral transmission, it is important to follow up on cases of campylobacteriosis in a daycare setting carefully. The MDPH *Health and Safety in Child Care* provides detailed information on case follow-up and control in a daycare setting. General recommendations include:

- Children with *Campylobacter* infection who have diarrhea should be excluded until their diarrhea is gone.

- Children with *Campylobacter* infection who have no diarrhea and are not otherwise ill may be excluded or remain in the program if special precautions are taken.

- Since most staff in child care programs are considered foodhandlers, those with *Campylobacter* in their stools (symptomatic or not) can remain on site, but must not prepare food or feed children until their diarrhea is gone and they have one negative stool test (submitted at least 48 hours after completion of antibiotic therapy, if antibiotics are given). (Per *105 CMR 300.200*)

- Refer to Chapter 17 of the MDPH *Health and Safety in Child Care* for complete guidelines on handling diseases spread through the intestinal tract.

School
Since campylobacteriosis may be transmitted person-to-person through fecal-oral transmission, it is important to follow up on cases of *Campylobacter* in a school setting carefully. The MDPH *Comprehensive School Health Manual* provides detailed information on case follow-up and control in a school setting. General recommendations include:

- Students or staff with *Campylobacter* infection who have diarrhea should be excluded until their diarrhea is gone.

- Students or staff with *Campylobacter* who do not handle food, have no diarrhea or have mild diarrhea and are not otherwise sick, may remain in school if special precautions are taken.

- Students or staff who handle food and have *Campylobacter* infection (symptomatic or not) must not prepare food until their diarrhea is gone and they have one negative stool test (submitted at least 48 hours after completion of antibiotic therapy, if antibiotics are given). (Per *105 CMR 300.200*)

- Refer to Chapter 8 of the MDPH *Comprehensive School Health Manual* for complete guidelines on handling diseases spread through the intestinal tract.

Community Residential Programs
Actions taken in response to a case of campylobacteriosis in a community residential program will depend on the type of program and the level of functioning of the residents.

In long-term care facilities, residents with campylobacteriosis should be placed on standard (including enteric) precautions until their symptoms subside *and* they have a negative stool culture for *Campylobacter.* (Refer to the Division of Epidemiology and Immunization *Control Guidelines for Long-Term Care Facilities* for further actions. A copy can be obtained by calling the Division at (617) 983-6800.) Staff members who give direct patient care (*e.g.,* feed patients, give mouth or denture care or give medications) are considered foodhandlers and are subject to foodhandler restrictions under *105 CMR 300.200.* See Section 4) A above. In addition, staff members with *Campylobacter* infection who are not foodhandlers should not work until their diarrhea is gone.

In residential facilities for the developmentally disabled, staff and clients with campylobacteriosis must refrain from handling or preparing food for other residents until their diarrhea has subsided and they have one negative stool test for *Campylobacter* (submitted at least 48 hours after completion of antibiotic therapy, if antibiotics are given). (Per *105 CMR 300.200*) In addition, staff members with *Campylobacter* infection who are not foodhandlers should not work until their diarrhea is gone.

Reported Incidence Is Higher than Usual/Outbreak Suspected

If the number of reported cases of campylobacteriosis in your city/town is higher than usual, or if you suspect an outbreak, investigate to determine the source of infection and mode of transmission. A common vehicle, such as water, food or association with a daycare center, should be sought and applicable preventive or control measures should be instituted. Control of person-to-person transmission requires special emphasis on personal cleanliness and sanitary disposal of feces. Consult with the epidemiologist on-call at the Division of Epidemiology and Immunization at (617) 983-6800 or (888) 658-2850**.** The Division can help determine a course of action to prevent further cases and can perform surveillance for cases that may cross several town lines and therefore be difficult to identify at a local level.

Note: Refer to the MDPH's *Foodborne Illness Investigation and Control Reference Manual* for comprehensive information on investigating foodborne illness complaints and outbreaks. (Copies of this manual were distributed to local boards of health in 1997–98. It can also be located on the MDPH website in PDF format at <http://www.magnet.state.ma.us/dph/fpp/refman.htm>.) For recent changes (fall of 2000) to the Massachusetts Food Code, contact the Division of Food and Drugs, Food Protection Program at (617) 983-6712 or through the MDPH website at <http://www.state.ma.us/dph/fpp/>.

D. Preventive Measures

Environmental Measures

Implicated food items must be removed from use. A decision about testing implicated food items can be made in consultation with the Division of Food and Drugs (DFD) or the Division of Epidemiology and Immunization. DFD can help coordinate pickup and testing of food samples. If a commercial product is suspected, DFD will coordinate follow-up with relevant outside agencies. DFD is reachable at (617) 983-6712.

Note: The role of the DFD is to provide policy and technical assistance with the environmental investigation such as interpreting the Massachusetts Food Code, conducting a HACCP risk assessment, initiating enforcement actions and collecting food samples.

The general policy of the SLI is only to test food samples implicated in suspected outbreaks, not single cases (except when botulism is suspected). The LBOH may suggest that the holders of food implicated in single case incidents locate a private laboratory that will test food, or store the food in their freezer for a period of time in case additional reports are received. However, a single, confirmed case with leftover food consumed within the incubation period may be considered for testing.

Note: Refer to the MDPH's *Foodborne Illness Investigation and Control Reference Manual* for comprehensive information in investigating foodborne illness complaints and outbreaks.

Personal Preventive Measures/Education

To avoid future exposures, recommend that individuals:

- Always wash their hands thoroughly with soap and water before eating or preparing food, after using the toilet, after changing diapers, and after touching their pets or other animals.
- After changing diapers, wash the child's hands as well as their own.
- In a daycare setting, dispose of feces in a sanitary manner.
- When caring for someone with diarrhea, to scrub their hands with plenty of soap and water after cleaning the bathroom, helping the person use the toilet, or changing diapers, soiled clothing or soiled sheets.
- Keep food that will be eaten raw, such as vegetables, from becoming contaminated by animal-derived food products.
- Avoid letting infants or young children come into contact with pets that are sick with diarrhea, especially puppies and kittens.
- Make sure to cook all food products from animals thoroughly, especially poultry products, and avoid consuming raw eggs or cracked eggs, unpasteurized milk, or other unpasteurized dairy products.
- Avoid sexual practices that may permit fecal-oral transmission. Latex barrier protection should be emphasized as a way to prevent the spread of campylobacteriosis to case's sexual partners as well as being a way to prevent the exposure to and transmission of other pathogens.

A *Campylobacter Public Health Fact Sheet* can be obtained from the Division of Epidemiology and Immunization or through the MDPH website at <http://www.state.ma.us/dph/>. Click on the "Publications" link and scroll down to the Fact Sheet section. It is also available in Spanish.

ADDITIONAL INFORMATION

The formal Centers for Disease Control and Prevention (CDC) surveillance case definition for campylobacteriosis is the same as the criteria outlined in Section 2) A of this chapter. (CDC case definitions are used by the state health department and CDC to maintain uniform standards for national reporting.) When reporting a case to the MDPH, always refer to the criteria in Section 2) A.

REFERENCES

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Chin, J., ed. *Control of Communicable Diseases Manual, 17th Edition*. Washington, DC, American Public Health Association, 2000.

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